Ryozo WATANABE*: **Notes on Japanese Mosses (2)**

渡 辺 良 象*: 日本産蘇類報告 (2)

4) The genus *Helodium* of Japan.

The genus *Helodium* is a member of the Thuidiaceae. In this genus five species have been described, and are found chiefly in the temperate and arctic zones of the northern hemisphere.

In 1908, V. F. Brotherus (1) reported *Helodium paludosum* from Japan. In 1929, E. Iishiba (3) reported three species, i. e. *Helodium sachalinense*, *H. lanatum* and *H. paludosum*, but the former two species were recorded from Saghalien. Most recently Dr. K. Sakurai (7) listed only one species, *H. paludosum*.

In April of 1958, I received many specimens of Thuidiaceae from the Hattori Botanical Laboratory. After studying those materials, I have to record a new member of *Helodium* in Japan. The circumscription of the new member and its distinction from the known species in Japan are as follows:

Key to the species

1) Stem leaves widely cordate, apex abruptly angutate, curved. Costa 2/3 of leaf length, borders ciliate, papilla one per cell............................*H. sachalinense*
2) Stem leaves lanceolate, apex gradually tapered. Costa 6/7 of leaf length, papilla one per cell ....*H. paludosum*

Helodium sachalinense (Lindb.) Broth. in Engl. & Prant. Nat. Pflanz.-fam. 1-3-2: 1018 (1908), et ibid. 11, 2: 330 (1925). (Fig. 1).

Thuidium sachalinense Lindb. in Acta. Soc. sci. Fenn. **10**: 244 (1872); *Tetracladium osadae* Sak. in Bot. Mag. Tokyo **55**: 533 (1941).

Plants in thin mats, yellowish green to yellowish brown below. Stems 3-6 cm long, creeping, soft, closely, regularly and pinnately branched. Branch simple, slender, attenuate. Paraphyllia of stem polymorphic, but that of branch aculeate. Stem leaves widely cordate from a narrow base, abruptly contracted to a narrow apex, margins revoluted, ca. 0.7×0.68 mm long and 0.7×1.15 mm wide, costa 2/3-3/4 of leaf length, 0.1-0.11 mm wide at base, smooth, cells pellucid, quadrate, the median ones 12-13×8-10μ, unipapilla. Branch leaves ovate, acuminate, 0.25-0.35×0.4-0.5 mm, margins serrated; costa 3/4 of leaf length, long spinose papillae on the back of costa; cells somewhat obscure, the apical one rhomboid with thickened walls, 10–12×12–14μ, median one haxagonal, 9×10–$9\times10.5\mu$, unipapilla ceratoid. Plants habitually sterile.

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* [redacted] Toshima-ku, Tokyo. 東京都豊島区[redacted]

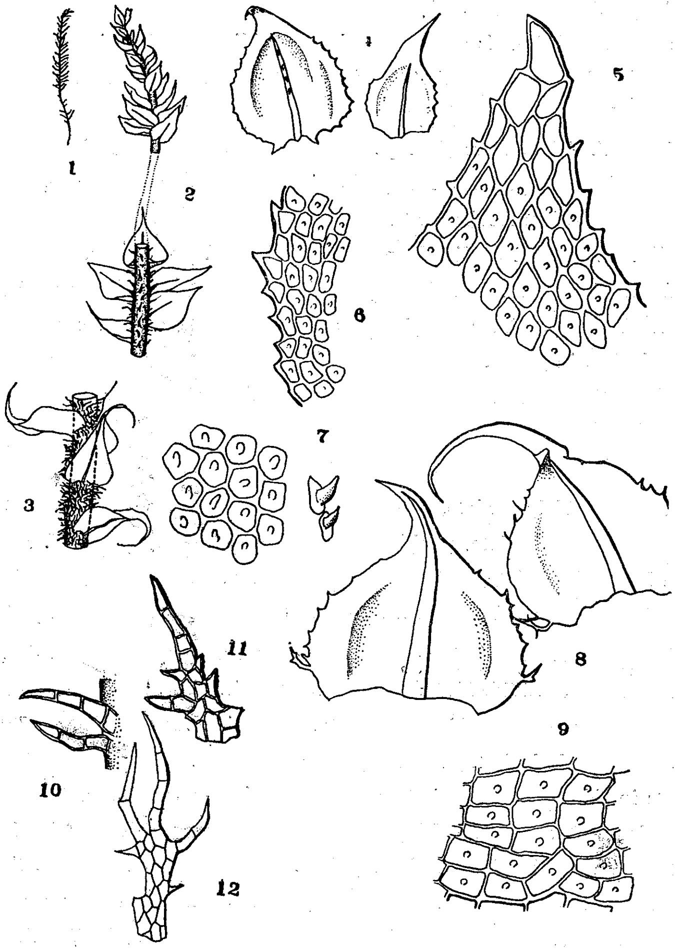

Fig. 1. *Helodium sachalinense* (Lindb.) Broth. 1. Plant, ×1/2. 2. Part of branch, ×16. 3. Part of stem, ×14. 4. Branch leaves, ×41. 5. Apical part of branch leaf, ×360. 6. Cells of shoulder part of branch leaf, ×160. 7. Cells from middle of branch leaf, ×360. 8. Stem leaves, ×41. 4. Cells from middle of stem leaf, ×360. 10. Paraphyllia of branch, ×160. 11. Paraphyllia of stem, ×160. 12. do, ×140.

Specim. exam.; Hokkaido, Rhishiri Isl., Mt. Rhishiri, alt. ca. 100-200 m, coll. Zennosuke Iwatsuki, no. 27727, Aug. 8, 1954 in Herb. Hattori Botanical Laboratory. —Range: Saghalien, North Korea and Japan.—This species is a new addition to the Japanese moss flora.

For a long time the present species has been known only from the type locality. In 1940, Mr. T. Osada collected a moss at the Pujongan plateau in North Korea. In 1941, Dr. K. Sakurai (7) treated it as a new species, *Tetracladium osadae*, but it belonged truely to *Helodium sachalinense* as recently confirmed by Mr. T. Osada (6). Recent collection of this species in Japan proper by Mr. Z. Iwatsuki extended its geographical range remarkably. I examined specimens from the new locality as well as the type specimen of *T. osadae*, and found that they agree quite well with the description of *Th. sachalinense* given by Lindberg (4) concerning stem leaves, branch leaves, cells and papillae.

This species differs from other species of the genus by marginal cilia of the leaf, long spinose papillae on the back of costa of the branch leaf.

At a glance this differentiation seems to serve for the separation of the genus. As I have not yet studied the peristome, the problem may be retained for a future study.

Helodium paludosum (Sull.) Aust., Musc. Appal. 306 (1870). (Fig. 2).

Thuidium paludosum (Sull.) Ran. et Herv., Cat. 38; *Elodium paludosum* Aust., M· Appal. n. 306; *Hylocomium paludosum* Jag., op. cit. 661 (1877-78); *Hypnum paludosum* Sull., M. Allegh. n. 7 (1846).

Plants intermediate in size, yellowish green or yellowish brown, primary stems prostrate. Stems 4-13 cm long creeping, pinnately branched, branches 1-2 cm long, stems and branches covered with long filamentous paraphyllia, stem leaves imbricate, lanceolate, gradually tapering into acumen, often somewhat falcate secund, 2.5-3.2×0.5-0.55 mm plicate, serrate in acumen, costa 7/8-6/7 length of leaf, upper leaf cells linear fusiform, somewhat obtuse, 14-28×7-8μ usually smooth on both surfaces, median cells unipapilla. Branch leaves lanceolate, 2.1-2.5×0.45-0.5 mm often loosely spreading when dry. Seta curved when dry, reddish brown, smooth, about 3-5 cm long, 0.15 mm wide. Theca strongly inclined to almost horizontal, reddish brown, 2.5-4×0.7-1 mm, strongly contracted below the opening when dry. Operculum conic, reddish, smooth on the surface, about 0.7-0.75 mm high. Annulus large. Peristome lanceolate, teeth 16, acuminate, segments of inner peristome carinate. Spores granular, 17-22μ, in diameter.

Ecology. On damp soil, humus in the high moor, on wet rocks in forest and wet limestone in *Cryptomeria japonica* forest, at the elevation up to 1600 m.

Specim. exam. Honshu, Niigata Pref. Nakakambara-gun, Oegawa-mura (Y. Ikegami no. 24624), Fukushima pref., Tamura-gun, Takine-machi (R. Watanabe nos. 1286, 1287), Higashishirakawa-gun, Takenuki-mura (T. Higuchi no. 2122), Nagano pref., Kitasaku-gun, Fusemura, (Sh. Okamura nos. 930, 1015), Kogata-gun, Sugadaira-mura (N. Takaki nos. 769, 771). —Range: Japan, Altai, Transbaikal and North America.

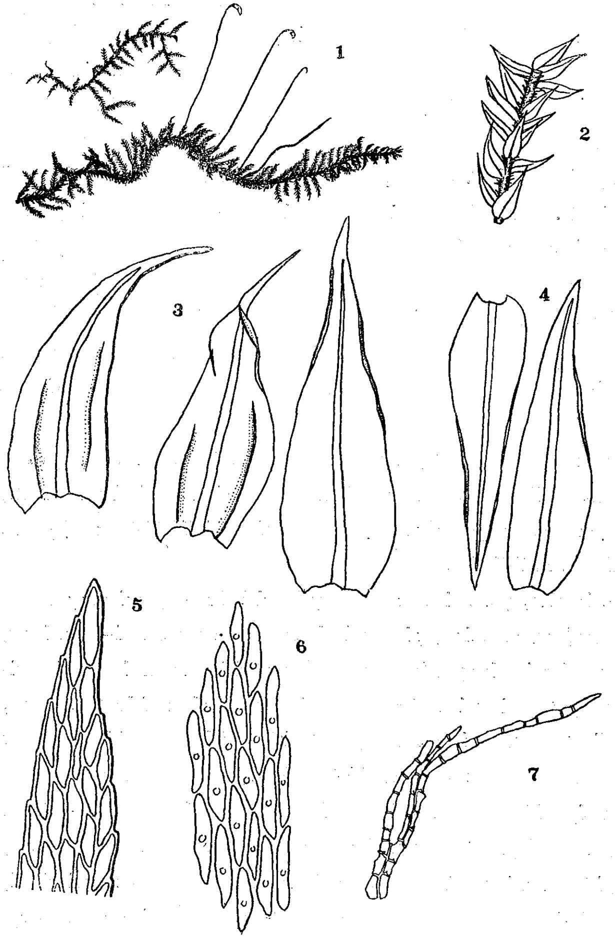

Fig. 2. *Helodium paludosum* (Sull.) Aust. 1. Plant, ×1/2. 2. Branch, ×16. 3. Stem leaves, ×35. 4. Branch leaves, ×16. 5. Apical part of branch leaf, ×360. 6. Cells from middle of branch leaf, ×360. 7. Paraphyllia, ×80.

Most of the specimens examined in this study are kept in the herbaria of the Hattori Botanical Laboratory and Kyoritsu Pharmaceutical College of Tokyo and others in the private herbarium of Mr. T. Higuchi (Fukushima Agricultural High School).

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Nogoya University, Mr. Reeves, Narimasu High School, Mr. Z. Iwatsuki and Mr. M. Mizutani of Hattori Botanical Laboratory, Mr. H. Inoue, Tokyo University of Education and Mr. T. Higuchi, Fukushima Agricultural High School for suggesting this investigation as well as for constant guidance in the course of the work.

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□ G. Erdtman: **Pollen and Spore Morphology / Plant Taxonomy** (1957) 23cm ×16cm. クロース，口絵 1 (*Juniperus communis* の花粉), figs. 265, pp. 151 (Index 共)。内容は Preface 1 頁, Introduction 2 頁, 本文は裸子植物 40 頁, 羊歯植物 43 頁, 蘚苔植物 25 頁, 附録 21 頁 (索引 3 頁共)。裸子植物は 11 科 56 属, 98 種を扱い, その内にはメタセコイヤや日本のものも収録されている。羊歯植物は 29 科, 112 属, 115 種, 蘚苔植物は苔類 23 科 27 属 30 種, 蘚類 40 科 31 属 60 種にわたっている。本書は Pollen Morphology and Plant Taxonomy (1952) の第2巻として刊行されたもので，本文の各編は，属のアルファベット順に配列されているが，蘚苔編では蘚苔を一括したアルファベット順になっている。265 の挿図は大部分は線図であるが，写真も並用されていて，いずれも鮮明であって立派な印刷である。附録は2編からなり，その1は B. M. Afzelius が担当する On new method in physical cell research and their application in studies of pollen grains and spore で，その2は J. Radman Praglowski の On the cutting of ultra-thin sections で両編をあわせて花粉学研究の進歩に伴い，または進歩を促進する研究方法を示したもので，我が国の花粉学者も当然参考することになるべき重要な文献である。発行所は Almqvist & Wiksell, Stockholm で，本邦における売価は丸善で 3200 円である。(久内清孝)